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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/686,194	**Applicant(s)** HO ET AL.	
	Examiner AKLILU k. WOLDEMARIAM	**Art Unit** 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _13 August 2009_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-57_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-55_ is/are rejected.

7)☒ Claim(s) _56-57_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _09 October 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's declaration 131 affidavits support document is persuasive and, therefore, the Non-final rejection was sent 01/14/2009, is withdrawn.

Response to Arguments

2. Applicant's arguments, see page 12, filed 05/14/2009, with respect to the rejections of claims 1-55 under 35 U.S.C 101 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

Applicant's arguments, see pages 12-16, filed 05/14/2009, with respect of the rejections of claims 1-55 under 35 U.S.C 103 have been fully considered and are persuasive. However, upon further consideration, a new ground of rejection is made in view of Levin et al., "Levin" (U.S. Patent number 6, 018, 600) in view of Hossack et al., "Hossack" (U.S. Patent number 5, 873, 830).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hossack et al., “Hossack” (U.S. Patent number 5, 873, 830) in view of Levin et al., “Levin” (U.S. Patent number 6, 018, 600).

Regarding claims 1, 4, 16 and 19, *Hossack discloses* a method for improving resolution of a two-dimensional image capable of being acquired from an object at a first pixel size *(see col.2, lines 56-61, applying a first set of imaging parameters inside the region of interest to improve temporal resolution inside the region of interest)*, wherein each image said plurality is capable of overlaying one other images in said plurality at an increment, wherein said increment is no larger than said first pixel size *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data)*, comprising one or more computers implementing:

defining a sampling region for producing said image at a second pixel size, said second pixel size being no larger than said first pixel size *(see item 940, image sub-block, item 945, first image, item 950, second image and col. 2, lines 33-44, selecting a region of interest in an ultrasound image, applying a first set of imaging parameters inside the region of interest to improve spatial resolution inside the region of interest, said first set being different from a second set of imaging parameters applied outside the region of interest and a first image portion within the region of interest and second image portion outside the region of interest, said first and second image portions being in the same image mode and col.2, lines 55-65, col.3, lines 19-27, 45-47, 60-61, col.5, lines 44-52,55-62, col.11, lines 17-23, multiple regions are required , selection is based on measurement, 41-50, col.13, lines 44-57, a second set of image data within the region of interest is processed by the second processor);*

sampling, with an overlapping increment, said sampling region thereby producing a multiplicity of sample layers, said overlapping increment being no larger than said first pixel size thereby determining said second pixel size *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data);*

obtaining values of the pixels of the second pixel size in each of the multiplicity of sample layers (*see col.2, lines 33-44, said first and second image portions being in the same image mode and col.3, lines 34-36, measuring motion of a sub-block of pixels between at least two image frames and 45-47, 60-61, col.5, lines 44-52,55-62, col.11, lines 17-23, 41-50, col.13, lines 44-57 and col.22, lines 39-42, maximum block size, the original image data can be down sampled in order to increase real pixel spacing*);

computing the value of each pixel of said second pixel size from the values of the corresponding pixels in the multiplicity of the sample layers, thereby producing an intermediate image *(see col.10, lines 46-52, the function can be computed by using motion estimates of a sub-block of moving pixels or by computing the difference between pixels at the same spatial location in successive frames and col.11, lines 27-37, multiple regions are required, selection is based on automatic measurement and the entire image frame can be divided into regions, and the calculation*); and

Hossack does not disclose dividing, in the Fourier domain, said intermediate image by a filtering function thereby producing said image at the second pixel size, said filter function being capable of representing artifacts from the multiple sampling.

However Levin discloses dividing, in the Fourier domain, said intermediate image by a filtering function thereby producing said image at the second pixel size, said filter function being capable of representing artifacts from the multiple sampling *(see fig.8, fourier transform background data and col.2, lines 29-34, the background data are fourier transformed to reconstruct a background image component and col.12, lines 17-26).*

It would have been obvious to ordinary skill in the art at time when invention was made to use Levin's fourier transform in Hossack's defining a sampling region for producing said image at a second pixel size, said second pixel size being no larger than said first pixel size because it will allow to sampling and reconstruction signals and images including MR images of multiple regions, *[Levin, see col.1, lines 13-14].*

Regarding claims 2 and 5, *Hossack discloses* the method of claims 1 and 4, wherein said second pixel or voxel size is equal to said overlapping increment *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data).*

Regarding claims 3 and 6, *Hossack discloses* the method of claims 1 and 4, wherein said second pixel size is equal to said first pixel size divided by said multiplicity

(see col.15, lines 62-64, the pixel data in the region of overlap can be averaged or the data from one of the sub-blocks can be given priority).

Regarding claim 7*, Levin discloses* the method of claim 1, wherein said filter function is a point response function *(see fig.8, fourier transformation and col.21, lines 40-48, forurier transforming subsets of the sampled data and using the reconstruction matrix to form a linear combination and a point response function is well know to ordinary skill in the art).*

Regarding claim 8, *Levin discloses* the method of claim 7, wherein said point response function is defined by a multiple sampling factor which is equal to said multiplicity *(see fig.8, fourier transformation and col.21, lines 40-48, forurier transforming subsets of the sampled data and using the reconstruction matrix to form a linear combination and a point response function is well know to ordinary skill in the art).*

Regarding claim 9, *Hossack discloses* the method of claim 1, wherein the sampling is performed with an overlapping increment having a varied size *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data).*

Regarding claim 10, *Hossack discloses* the method of claim 1, wherein the sampling is performed with an overlapping increment having a fixed size *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel* *spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data).*

Regarding claim 11, *Hossack discloses* the method of claim 1, wherein said overlapping increment is taken along one or more dimensions *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data).*

Regarding claim 12, *Hossack discloses* the method of claim 11, wherein said overlapping increment is taken equally on one or more dimensions *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data).*

Regarding claim 13, *Hossack discloses* the method of claim 11, wherein said overlapping increment is taken unequally on one or more dimensions *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data).*

Regarding claim 14, *Hossack discloses* the method of claim 12, wherein said overlapping increment is taken angularly *(see col.2. lines 33-44, 55-65, col.3, lines 19-*

27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data).

Regarding claim 15, *Hossack discloses* the method of claim 1, wherein said overlapping increment is defined in terms of Cartesian coordinates or polar coordinates *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data)*.

Regarding claim 17, *Hossack discloses* the method of claim 16, wherein each image in said plurality overlays one other image in said plurality at an increment having a fixed size and wherein said second pixel size is equal to said increment (*see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data and overlays referred to overlapping)*.

Regarding claim 18, *Hossack discloses* the method of claim 16, wherein each image in said plurality overlays one other image in said plurality at an increment having a varied size and wherein said second pixel size is equal to the smallest of said increment (*see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23,* *lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data and overlays referred to overlapping).*

Regarding claim 20, *Hossack discloses* the method of claim 19, wherein each image in said plurality overlays one other image in said plurality at an increment having a fixed size and wherein said second voxel size is equal to said increment (*see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data and overlays referred to overlapping).*

Regarding claim 21, *Hossack discloses* the method of claim 19, wherein each image in said plurality overlays one other image in said plurality at an increment having a varied size and wherein said second voxel size is equal to the smallest of said increment (*see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data and overlays referred to overlapping).*

Regarding claim 22, *Levin discloses* the method of claim 16, wherein said filter function is a point response function *(see fig.8, fourier transformation and col.21, lines*

40-48, forurier transforming subsets of the sampled data and using the reconstruction matrix to form a linear combination and a point response function is well know to ordinary skill in the art).

Regarding claim 23, *Hossack discloses* the method of claim 22, wherein said point response function is defined by a multiple overlaying factor which is equal to said plurality *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data and overlaying referred to overlapping)*

Regarding claim 24, *Hossack discloses* the method of claim 16, wherein said overlaying is performed along one or more dimensions *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data).*

Regarding claim 25, *Hossack discloses* the method of claim 24, wherein said overlaying is performed equally on one or more dimensions (*see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data and overlays referred to overlapping).*

Regarding claim 26, *Hossack discloses* the method of claim 24, wherein said overlaying is performed unequally on one or more dimensions (*see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data and overlays referred to overlapping)*.

Regarding claim 27, *Hosssack discloses* the method of claim 2.5, wherein said overlaying is performed angularly (*see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data and overlays referred to overlapping)*.

Regarding claim 28, *Hossack discloses* the method of claim 16, wherein said increment is defined in terms of Cartesian coordinates or polar coordinates *(see col.9, lines 15-17, interpolated frames are generated to spatially coordinate the position of moving objects frame).*

Regarding claims 29, 30, 32 and 33, *Hossack discloses* a method for producing a two-dimensional image of an object from multiple acquisitions using a two-dimensional acquisition matrix, wherein said acquisition matrix defines the resulting pixel size of said two-dimensional image *(see fig.6, controller and item 940, fig.9, image sub-block referred to matrix)*, said method comprising one or more computers implementing:

acquiring, one at a time, a multiplicity of images from said object by shifting one or more units in said acquisition matrix *(see col.10, lines 49-52 computing the difference between pixels at the same spatial location in successive frames, 57-58, x and y are the pixel shifts to obtain the best match);*

obtaining values of the pixels in each image in said multiplicity (*see col.2, lines 33-44, said first and second image portions being in the same image mode and col.3, lines 34-36, measuring motion of a sub-block of pixels between at least two image frames and 45-47, 60-61, col.5, lines 44-52,55-62, col.11, lines 17-23, 41-50, col.13, lines 44-57 and col.22, lines 39-42, maximum block size, the original image data can be down sampled in order to increase real pixel spacing*);

computing the value of each pixel from the values of the corresponding pixels in the multiplicity, thereby producing an intermediate image *(see col.10, lines 46-52, the function can be computed by using motion estimates of a sub-block of moving pixels or by computing the difference between pixels at the same spatial location in successive frames and col.11, lines 27-37, multiple regions are required, selection is based on automatic measurement and the entire image frame can be divided into regions, and the calculation*); and

Hossack does not disclose dividing, in the Fourier domain, said intermediate image by a faltering function thereby producing said two-dimensional image, said filter function being capable of representing artifacts from multiple acquisitions.

However Levin discloses dividing, in the Fourier domain, said intermediate image by a faltering function thereby producing said two-dimensional image, said filter function being capable of representing artifacts from multiple acquisitions *(see fig.8, fourier transform background data and col.2, lines 29-34, the background data are fourier transformed to reconstruct a background image component and col.12, lines 17-26).*

It would have been obvious to ordinary skill in the art at time when invention was made to use Levin's fourier transform in Hossack's defining a sampling region for producing said image at a second pixel size, said second pixel size being no larger than said first pixel size because it will allow to sampling and reconstruction signals and images including MR images of multiple regions, [*Levin, see col.1, lines 13-14].*

Regarding claim 31, *Levin discloses* the method of claim 30, wherein the resulting pixel size of said two- dimensional image is equal to the size of one or more units of said acquisition matrix *(see item 102, fig.9, data acquisition and col.7, lines 37-46).*

Regarding claim 34, *Levin discloses* the method of claim 33, wherein the resulting voxel size of said three- dimensional image is equal to the size of one or more units of said acquisition matrix *(see item 102, fig.9, data acquisition and col.7, lines 37-46).*

Regarding claim 35, *Levin discloses* the method of claim 33, wherein said acquisition matrix comprises equally- spaced units *(see item 102, fig.9, data acquisition and col.7, lines 37-46).*

Regarding claim 36, *Levin discloses* the method of claim 33, wherein said acquisition matrix comprises unequally- spaced units (*see item 102, fig.9, data acquisition and col.7, lines 37-46).*

Regarding claim 37, *Hossack discloses* the method of claim 33, wherein said acquisition matrix is defined in terms of reference coordinates *(see col.9, lines 15-17, interpolated frames are generated to spatially coordinate the position of moving objects frame).*

Regarding claim 38, *Hossack discloses* the method of claim 37, wherein said reference coordinates are Cartesian coordinates or polar coordinates *(see col.9, lines 15-17, interpolated frames are generated to spatially coordinate the position of moving objects frame).*

Regarding claim 39, *Hossack discloses* the method of claim 33, wherein images of said multiplicity of images are acquired at defined time points over a period of time *(see col.18, lines 28-48, automatically switches imaging parameters after detecting a sequence of frames of high motion, for example instead of after detecting the first frame of high motion).*

Regarding claim 40, *Hossack discloses* the method of claim 39, further comprising one or more preliminary test acquisitions for determining the scheduling of said time points *(see col.17, lines 14-26, for automatically applying certain imaging parameters within a region of interest of an ultrasond-image frame in response to detected image).*

Regarding claim 41*, Hossack discloses* the method of claim 33, wherein said multiplicity of images are acquired, one at a time, by shifting a decimal number of units in said acquisition matrix *(see col.10, lines 57-57, where x and y are the pixel shifts required to obtain the best match).*

Regarding claim 42, *Hossack discloses* the method of claim 33, wherein said filter function is a point response function *(see fig.8, fourier transformation and col.21, lines 40-48, forurier transforming subsets of the sampled data and using the reconstruction matrix to form a linear combination and a point response function is well know to ordinary skill in the art).*

Regarding claim 43, *Levin discloses* the method of claim 42, wherein said point response function is defined by a multiple acquisition factor which is equal to said multiplicity *(see fig.8, fourier transformation and col.21, lines 40-48, forurier transforming subsets of the sampled data and using the reconstruction matrix to form a linear combination and a point response function is well know to ordinary skill in the art).*

Regarding claim 44, *Levin discloses* the method of claim 33, wherein said acquisition matrix is adaptively determined by adjusting the unit size or scheme for the subsequent acquisitions based on assessment of variance for one or more comparators for at least two prior acquisitions *(see items 100 and 102, data acquisition fig.9 and col.7, lines 37-46, matrix).*

Regarding claim 45, *Levin discloses* the method of claim 44, wherein the one or more comparators are selected from the group consisting of pixel or voxel data, k-space data, phase data, and signal-to-noise ratio data *(see abstract, a set k-space locations based upon the relative locations of the structures in order to achieve comparable eigenvalues of a reconstruction matrix).*

Regarding claim 46, *Levin discloses* the method of claim 33; further comprising one or more preliminary test acquisitions for determining the unit size and scheme of said acquisition matrix *(see items 100 and 102, data acquisition fig.9 and col.7, lines 37-46, matrix).*

Regarding claims 47 and 49, *Hossack discloses* a method for transmitting a two-dimensional image of an object, said image having a first pixel size *(see col.2, lines 56-61, applying a first set of imaging parameters inside the region of interest to improve temporal resolution inside the region of interest),* the method comprising one or more computers implementing:

each image in said plurality being capable of overlaying one other images in said plurality at an increment *(see col.2. lines 33-44, 55-65, col.3, lines 19-27, 45-47, 60-61 and col.23, lines 8-11, the centers can also be offset so that the blocks overlap (e.g. 16x16 blocks spaced at 12 pixel spacing). where blocks overlap, the pixel output level and col.30, lines 12-13, interpolated image which comprises overlapping data)*; transmitting, one at a time, at least two images in said *plurality (see item 125, fig.1, transmit and col.6, lines 54-58, controller 115 would instruct the transmit beamformer 125 to fire more lines);*

computing the value of each pixel of an intermediate image from the values of the corresponding pixels in the transmitted images in said plurality *(see col.10, lines 46-52, the function can be computed by using motion estimates of a sub-block of moving pixels or by computing the difference between pixels at the same spatial location in successive frames and col.11, lines 27-37, multiple regions are required, selection is based on automatic measurement and the entire image frame can be divided into regions, and the calculation*); and

Hossack does not disclose decomposing said image into a plurality of images taken from said object and dividing, in the Fourier domain, said intermediate image by a filtering function thereby producing a resultant two-dimensional image having a second pixel size, said filter function being capable of representing artifacts from the multiple overlaying.

However, Levin discloses decomposing said image into a plurality of images taken from said object *(see fig.8, decompose data into background and edge data and abstract, the k-space sample data are decomposed into background of data and edge data. The back ground data are fourier transformed to reconstruct a back-ground image component and col.2, lines 28-31)*

dividing, in the Fourier domain, said intermediate image by a filtering function thereby producing a resultant two-dimensional image having a second pixel size, said filter function being capable of representing artifacts from *(see fig.8, fourier transform background data and fourier transform subsets of edge data and col.12, lines 18-35).*

It would have been obvious to ordinary skill in the art at time when invention was made to use Levin's decomposing said image into a plurality of images taken from said object in Hossack's image in said plurality being capable of overlaying one other images in said plurality at an increment because it will to sampling and reconstruction signals and images including MR images of multiple regions, [Levin, see col.1, lines 13-14].

Regarding claim 48, *Levin discloses* the method of claim 47, wherein said second pixel size is equal to said first pixel size *(see col.2, lines 45-49, i.e., first pixel size referred to first image and second pixel size referred to second image).*

Regarding claim 50, *Levin discloses* the method of claim 49, wherein said second voxel size is equal to said first voxel size *(see col.2, lines 45-49, i.e., first pixel size referred to first image and second pixel size referred to second image).*

Regarding claim 51, *Hossack discloses* the method of claim 49, wherein said filter function is a point response function *(see fig.8, fourier transformation and col.21, lines 40-48, forurier transforming subsets of the sampled data and using the reconstruction matrix to form a linear combination and a point response function is well know to ordinary skill in the art).*

Regarding claim 52, *Hossack discloses* the method of claim 49, wherein all images in said plurality is transmitted *(see item 125, fig.1, transmit and item 910, fig.9, transmit and col.6, lines 54-57, for increased line inside the region, the controller 115 would instruct the transmit beamformer 125 to fire more lines)*

Regarding claim 53, *Levin discloses* the method of 47, wherein said two-dimensional image is selected from the group consisting of a magnetic resonance image, an image produced by a digital scanner, a pathological image, a histological image, and a radiologieal image *(see col.1, lines 13-14, sampling and reconstruction of signals and images including MR images of multiple regions).*

Regarding claim 54, *Levin disclose*s the method of 49, wherein said three-dimensional image is selected from the group *consisting* of a magnetic resonance image, an image produced by a digital scanner, an image produced by a digital camera or digital video, a pathological image, a histological image, and a radiological image (*see col.1, lines 13-14, sampling and reconstruction of signals and images including MR images of multiple regions).*

Regarding claim 55, *Hossack discloses* the method of claim 49, wherein the computing is performed by taking arithmetic means *(see col.8, lines 24-26, the envelope of the summed signal is extracted and stored for scan conversion. Filters can be applied to the summed IF or baseband signals to enhance certain aspects of the image prior to detection and col.10, lines 22-38).*

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to AKLILU k. WOLDEMARIAM whose telephone number is (571)270-3247. The examiner can normally be reached on Monday-Friday 6:00 a.m-5:00 p.m EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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